

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Previously Presented) A photoelectric conversion device using a first conductivity type semiconductor substrate having convex and concave portions formed on its surface, the device comprising at least:

a second conductivity type semiconductor layer formed by implanting second conductivity type impurities into the surface of the first conductivity type semiconductor substrate and being in direct contact with said first conductivity type semiconductor substrate, without any intervening layers therebetween;

a front electrode connected to the second conductivity type semiconductor layer;

a rear electrode formed on the rear surface of the first conductivity type semiconductor substrate,

the second conductivity type semiconductor layer being partially in direct physical contact with the front electrode and becoming thinner as it goes farther from the contacted area, and wherein

the second conductivity type semiconductor layer has the convex and concave portions along the convex and concave portions of the first conductivity type semiconductor substrate, respectively.

2. (Previously Presented) The photoelectric conversion device according to claim 1, wherein the convex portions of the semiconductor substrate are arranged at given intervals and

the second conductivity type semiconductor layer becomes thinner from the top of the convex portions to the concave portions of the substrate.

3. (Original) The photoelectric conversion device according to claim 2, wherein each convex portion has the front electrode.

4. (Original) The photoelectric conversion device according to claim 1, wherein the convex portions of the semiconductor substrate are arranged at given intervals and the second conductivity type semiconductor layer becomes thicker from the top of the convex portions to the concave portions of the substrate.

5. (Previously Presented) The photoelectric conversion device according to claim 4, wherein each concave portion has the front electrode.

6. (Currently Amended) A method for manufacturing a photoelectric conversion device comprising:

(a) forming a film serving as a barrier against impurity diffusion on a first conductivity type semiconductor substrate having convex and concave portions formed on its surface in such a manner that the film becomes thicker from the convex portion to the concave portion;

(b) implanting second conductivity type impurities into the semiconductor substrate through the film to form a second conductivity type semiconductor layer which becomes thinner from the convex portions to the concave portions of the surface of the semiconductor substrate; and

(c) forming a front electrode that is in partial direct physical contact with the convex portion which constitutes a part of the semiconductor substrate surface, and

(d) etching and removing said film serving as a barrier against impurity diffusion,
wherein

the second conductivity type semiconductor layer has the convex and concave portions along the convex and concave portions of the first conductivity type semiconductor substrate, respectively.

7. (Cancelled)

8. (Previously Presented) A method for manufacturing a photoelectric conversion device comprising:

(a) forming a film containing second conductivity type impurities on a first conductivity type semiconductor substrate having convex and concave portions formed on its surface in such a manner that the film becomes thicker from the convex portion to the concave portion;

(b) implanting second conductivity type impurities into the semiconductor substrate from the film to form a second conductivity type semiconductor layer which becomes thicker from the top of the convex portions to the concave portions of [[on]] the surface of the semiconductor substrate; and

(c) forming a front electrode that is in partial direct physical contact with the concave portion which constitutes a part of the semiconductor substrate surface, wherein

the second conductivity type semiconductor layer has the convex and concave portions along the convex and concave portions of the first conductivity type semiconductor substrate, respectively.

9. (Cancelled)

10. (Previously Presented) The photoelectric conversion device according to claim 1, wherein the partial contact between the second conductivity type semiconductor layer and the front electrode is substantially a point.

11. (Previously Presented) The photoelectric conversion device according to claim 1, wherein the partial contact between the second conductivity type semiconductor layer and the front electrode is a straight line.